



SEQUENCE LISTING

<110> Genencor International, Inc.
Cervin, Marguerite A.
Soucaille, Philippe
Valle, Fernando
Whited, Gregory M.

<120> Glucose Transport Mutants for Production
of Biomaterial

<130> GC778-2

<140> US 10/728,337

<141> 2003-12-03

<150> US 60/416,166

<151> 2002-10-04

<150> US 60/374,931

<151> 2002-10-04

<160> 24

<170> FastSEQ for Windows Version 4.0

<210> 1

<211> 1350

<212> DNA

<213> Artificial Sequence

<220>

<223> GalP-ptrc DNA cassette

<400> 1

tcggttttca	cagttgttac	atttcttttc	agtaaagtct	ggatgcatat	ggcggccgca	60
taacttcgta	tagcatacat	tatacgaagt	tatctagagt	tgcatgcctg	caggtccgaa	120
tttctgccat	tcatccgctt	attatcactt	attcaggcgt	agcaccaggc	gtttaagggc	180
accaataact	gccttaaaaa	aattacgccc	cgccctgcc	ctcatcgag	tactgttgta	240
attcattaag	cattctgccc	acatggaagc	catcacaac	ggcatgatga	acctgaatcg	300
ccagcggcat	cagcaccttg	tcgccttgcc	tataatattt	gcccattggt	aaaacggggg	360
cgaagaagtt	gtccatattg	gccacgttta	aatcaaaact	ggtgaaactc	acccagggat	420
tggctgagac	gaaaaacata	ttctcaataa	accctttagg	gaaataggcc	agggtttcac	480
cgtaacacgc	cacatcttgc	gaatatatgt	gtagaaactg	ccggaaatcg	tcgtggtatt	540
cactccagag	cgatgaaaac	gtttcagttt	gctcatggaa	aacgggtgta	caagggtgaa	600
cactatccca	tatcaccagc	tcaccgtctt	tcattgccat	acggaattcc	ggatgagcat	660
tcatcaggcg	ggcaagaatg	tgaataaagg	ccggataaaa	cttgtgctta	ttttctttta	720
cggctcttta	aaaggccgta	atatccagct	gaacgggtct	gttataggta	cattgagcaa	780
ctgactgaaa	tgccctcaaaa	tgttctttac	gatgccattg	ggatatatca	acggtggtat	840
atccagtgat	ttttttctcc	atttttagctt	ccttagctcc	tgaaaatctc	gataactcaa	900
aaaatacgcc	cggtagtgat	cttattttcat	tatggtgaaa	gttggaacct	cttacgtgcc	960
gatcaacgtc	tcatttttcg	caaaagttgg	cccagggcct	cccggatatca	acagggacac	1020
caggatttat	ttattctgcg	aagtgatctt	ccgtcacagg	tattttattcg	gactctagat	1080
aacttcgtat	agcatacatt	atacgaagtt	atggatcatg	gctgtgcagg	tcgtaaataca	1140
ctgcataatt	cgtgtcgcgc	aaggcgcact	cccgttctgg	ataatgtttt	ttgcgccgac	1200
atcataacgg	ttctggcaaa	tattctgaaa	tgagctgttg	acaattaatc	atccggctcg	1260

tataatgtgt ggaattgtga gcgataaca atttcacaca ggaaacagac taattcacia	1320
taaaaaataa ccatattgga gggcatcatg	1350

<210> 2
 <211> 364
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> galP-trc DNA cassette after removal of CAT gene

<400> 2	
cagcagtggg ggtgatcggg tttggctggg gcccctcccc gcaccggagg ccgattacag	60
ccaaccacaa caggcaaaagg gtttggaaga tattcatatt attattgcgg ttgtcacagt	120
tgttacattt cttttcagta aagtctggat gcatatggcg gccgcataac ttcgtatagc	180
atacattata cgaagttatg gatcatggct gtgcaggctc taaatcactg cataattggg	240
gtcgtcgaag gcgcactccc gttctggata atgttttttg cgccgacatc ataacgggtc	300
tggcaaatat tctgaaatga gctgttgaca attaatcatc cggtcgtat aatgtgtggc	360
attg	364

<210> 3
 <211> 1352
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> glk-trc DNA cassette

<400> 3	
acttagtttg ccagcttgc aaaaaggcat cgctgcaatt ggatgcatat ggcgccgca	60
taacttcgta tagcatacat tatacgaagt tatctagagt tgcattgcctg caggccgaa	120
tttctgccat tcatccgctt attatcactt attcaggcgt agcaccaggc gtttaagggc	180
accaataact gccttaaaaa aattacgccc cgccctgcc ctcattcgag tactgttgta	240
attcattaag cattctgccc acatggaagc catcacaac ggcatgatga acctgaatcg	300
ccagcggcat cagcaccttg tgccttgcg tataatattt gcccatgggtg aaaacggggg	360
cgaagaagtt gtccatattg gccacgttta aatcaaaaact ggtgaaactc acccagggat	420
tggctgagac gaaaaacata ttctcaataa accctttagg gaaataggcc aggttttcac	480
cgtaacacgc cacatcttgc gaatatatgt gtagaaactg ccggaaatcg tctgtgtatt	540
cactccagag cgatgaaaac gtttcagttt gctcatggaa aacggtgtaa caagggtgaa	600
cactatccca tatcaccagc tcaccgtctt tcattgccat acggaattcc ggatgagcat	660
tcattcaggcg ggcaagaatg tgaataaagg ccggataaaa cttgtgctta tttttcttta	720
cggctcttta aaaggccgta atatccagct gaacgggtctg gttataggta cattgagcaa	780
ctgactgaaa tgccctcaaaa tgttctttac gatgccattg ggatatatca accggtggat	840
atccagtgat ttttttctcc attttagctt ccttagctcc tgaaaatctc gataactcaa	900
aaaatacggc cggtagtgat cttatttcat tatggtgaaa gttggaacct cttacgtgcc	960
gatcaacgct tcattttcgc caaaagtggg ccaggggctt ccggtatca acagggacac	1020
caggatttat ttattctgcg aagtgatctt ccgtcacagg tattttattcg gactctagat	1080
aacttcgtat agcatacatt atacgaagtt atggatcatg gctgtgcagg tctgaaatca	1140
ctgcataatt cgtgtcgtc aaggcgact cccgttctgg ataattgttt ttgcgccgac	1200
atcataacgg ttctggcaaa tattctgaaa tgagctgctg acaattaatc atccggctcg	1260
tataatgtgt ggaattgtga gcgataaca atttcacaca ggaaacagac gagaaagaat	1320
tattttgact ttagcggagc agttgaagaa tg	1352

<210> 4
 <211> 13669
 <212> DNA
 <213> Artificial Sequence

<220>

<223> pSYCO101 plasmid

<400> 4

tagtaaagcc	ctcgctagat	tttaatgcgg	atgttgcgat	tacttcgcca	actattgcga	60
taacaagaaa	aagccagcct	ttcatgatat	atctcccaat	ttgtgtaggg	cttattatgc	120
acgcttaaaa	ataataaaaag	cagacttgac	ctgatatgtt	ggctgtgagc	aattatgtgc	180
ttagtgcac	taacgcttga	gttaagccgc	gccgcgaagc	ggcgtcggct	tgaacgaatt	240
gtagacatt	atttgccgac	taccttgggtg	atctcgcctt	tcacgtagt	gacaaattct	300
tccaactgat	ctgcgcgcga	ggccaagcga	tcttcttctt	gtccaagata	agcctgtcta	360
gcttcaagta	tgacgggctg	atactgggccc	ggcaggcgct	ccattgcccc	gtcggcagcg	420
acatccttcg	gcgcgatttt	gccggttact	gcgctgtacc	aaatgcggga	caacgtaagc	480
actacatttc	gctcatcgcc	agcccagtcg	ggcggcgagt	tccatagcgt	taaggtttca	540
tttagcgct	caaataagac	ctgttcagga	accggatcaa	agagttcctc	cgccgctgga	600
cctaccaagg	caacgctatg	ttctcttgct	tttgtcagca	agatagccag	atcaatgtcg	660
atcgtggctg	gctcgaagat	acctgcaaga	atgtcattgc	gctgccattc	tccaaattgc	720
agttcgcgct	tagctggata	acgccacgga	atgatgtcgt	cgtgcacaac	aatgggtgact	780
tctacagcgc	ggagaatctc	gctctctcca	ggggaagccg	aagtttccaa	aaggctcgtt	840
atcaaagctc	gccgcgttgt	ttcatcaagc	cttacggtca	ccgtaaccag	caaatacaata	900
tcactgtgtg	gcttcaggcc	gccatccact	gcggagccgt	acaaatgtac	ggccagcaac	960
gtcggttcga	gatggcgctc	gatgacgcca	actacctctg	atagttgagt	cgatacttcg	1020
gcgatcaccg	cttcctcat	gatgtttaac	tttgttttag	ggcgactgcc	ctgctgcgta	1080
acatcgttgc	tgctccataa	catcaaacat	cgaccacgga	cgtaacgcgc	ttgctgcttg	1140
gatgcccgag	gcatagactg	taccccaaaa	aaacagtcac	aacaagccat	gaaaaccgcc	1200
actgcgccgt	taccaccgct	gcgttcggtc	aagggtctgg	accagttgag	tgagcgcata	1260
cgctacttgc	attacagctt	acgaaccgaa	caggcttatg	tccactgggt	tcgtgccttc	1320
atccgtttcc	acggtgtgcg	tcaccgggca	accttgggca	gcagcgaagt	cgaggcattt	1380
ctgtcctggc	tggcgaacga	gcgcaagggt	tcggtctcca	cgcatcgtca	ggcattggcg	1440
gccttgctgt	tcttctacgg	caagggtgctg	tgcacggatc	tgccctggct	tcaggagatc	1500
ggaagacctc	ggccgtcgcg	gcgcttgccg	gtgggtgctga	ccccggatga	agtggttcgc	1560
atcctcgggt	ttctggaagg	cgagcatcgt	ttgttcgccc	agcttctgta	tggaaacgggc	1620
atgcggatca	gtgaggggtt	gcaactgcgg	gtcaaggatc	tggatttcga	tcacggcacg	1680
atcatcgtgc	gggagggcaa	gggtctcaag	gatcgggcct	tgatgttacc	cgagagcttg	1740
gcaccagcc	tgcgcgagca	ggggaattaa	ttcccacggg	ttttgctgcc	cgaaacggg	1800
ctgttctggt	gttgctagtt	tgttatcaga	atcgcagatc	cggcttcagc	cggtttgccg	1860
gctgaaagcg	ctatttcttc	cagaattgcc	atgatttttt	ccccacggga	ggcgtcactg	1920
gctcccgtgt	tgctggcagc	tttgattcga	taagcagcat	cgcctgtttc	aggctgtcta	1980
tgtgtgactg	ttgagctgta	acaagtgtgc	tcagggtgttc	aatttcatgt	tctagttgct	2040
ttgttttact	ggtttcacct	gttctattag	gtgttacatg	ctgttcactc	gttacattgt	2100
cgatctgttc	atgggtgaaca	gctttgaatg	cacccaaaac	tcgtaaaagc	tctgatgtat	2160
ctatcttttt	tacaccgttt	tcactgtgtc	atatggacag	ttttcccttt	gatatgtaac	2220
ggtgaacagt	tggtctactt	ttgtttgtta	gtcttgatgc	ttcactgata	gatacaagag	2280
ccataagaac	ctcagatcct	tccgtattta	gccagtatgt	tctctagtgt	ggttcggtgt	2340
ttttgcgtga	gccatgagaa	cgaaccattg	agatcatact	tactttgcat	gtcactcaaa	2400
aattttgcct	caaaaactgg	gagctgaatt	tttgagttta	aagcatcgtg	tagtggtttt	2460
cttagtccgt	tatgtaggtg	ggaatctgat	gtaatgggtg	ttgggtattt	gtcaccattc	2520
atttttatct	ggttgttctc	aagtctcggt	acgagatcca	tttgtctatc	tagttcaact	2580
tggaaaatca	acgtatcagt	cgggcggcct	cgcttatcaa	ccaccaattt	catattgctg	2640
taagtgttta	aatctttact	tattggtttc	aaaaccatt	ggttaagcct	tttaaaactca	2700
tggtagttaa	tttcaagcat	taacatgaac	ttaaattcat	caaggctaat	ctctatattt	2760
gccttgtag	ttttcttttg	tgtagttct	tttaataacc	actcataaat	cctcatagag	2820
tatttgtttt	caaaagactt	aacatgttcc	agattatatt	ttatgaattt	ttttaactgg	2880
aaaagataag	gcaatatctc	ttcactaaaa	actaattcta	atttttcgct	tgagaacttg	2940
gcatagtttg	tccactggaa	aatctcaaag	cctttaacca	aaggattcct	gatttccaca	3000
gttctcgtca	tcagctctct	ggttgcttta	gctaatacac	cataagcatt	ttccctactg	3060
atgttcatca	tctgagcgta	ttggttataa	gtgaacgata	ccgtccgttc	tttccttgta	3120

gggttttcaa	tcgtaggggtt	gagtagtgcc	acacagcata	aaattagctt	ggtttcatgc	3180
tccgttaagt	catagcgact	aatcgctagt	tcatattgctt	tgaacaacaac	taattcagac	3240
atacatctca	attgggtctag	gtgatttttaa	tcactataacc	aattgagatg	ggctagtcaa	3300
tgataattac	tagtcctttt	cctttgagtt	gtgggtatct	gtaaattctg	ctagaccttt	3360
gctggaaaaac	ttgtaaattc	tgctagaccc	tctgtaaatt	ccgctagacc	tttgtgtgtt	3420
ttttttgttt	atattcaagt	ggttataatt	tatagaataa	agaaagaata	aaaaaagata	3480
aaaagaatag	atcccagccc	tgtgtataac	tcactacttt	agtcagttcc	gcagtattac	3540
aaaaggatgt	cgcaaacgct	gtttgtctct	ctacaaaaca	gaccttaaaa	ccctaaaggc	3600
ttaagtagca	ccctcgcaag	ctcgggcaaa	tcgctgaata	ttccttttgt	ctccgaccat	3660
caggcacctg	agtcgctgtc	tttttcgtga	cattcagttc	gctgcgctca	cggctctggc	3720
agtgaatggg	ggtaaatggc	actacagggc	ccttttatgg	attcatgcaa	ggaaactacc	3780
cataatacaa	gaaaagcccg	tcacgggcct	ctcagggcgt	tttatggcgg	gtctgctatg	3840
tggtgctatc	tgactttttg	ctgttcagca	gttcctgccc	tctgattttc	cagtctgacc	3900
acttcggatt	atcccgtgac	aggtcattca	gactggctaa	tgacccagct	aaggcagcgg	3960
tatcatcaac	aggcttacct	gtcttactgt	cgggaattca	tttaaatagt	caaaagcctc	4020
cgaccggagg	cttttgactg	ctaggcgatc	tgtgctgttt	gccacgggat	gcagcaccag	4080
cgcgagatta	tgggctcgca	cgctcgactg	tcggacgggg	gcactggaac	gagaagtcag	4140
gcgagccgtc	acgcccttga	caatgccaca	tcctgagcaa	ataattcaac	cactaaacaa	4200
atcaaccgcg	tttcccgagg	gtaaccaagc	ttgcgggaga	gaatgatgaa	caagagccaa	4260
caagttcaga	caatcacctc	ggccgcccgc	cagcaaatgg	cggcggcggg	ggaaaaaaa	4320
gccactgaga	tcaacgtggc	ggtggtgttt	tccgtagtgt	accgcggagg	caacacgctg	4380
cttatccagc	ggatggacga	ggccttcgtc	tccagctgcg	atatttcctc	gaataaagcc	4440
tggagcgcct	gcagcctgaa	gcaaggatcc	catgaaatta	cgtcagcggg	ccagccagga	4500
caatctctgt	acggtctgca	gctaaccaac	caacagcgaa	ttattatttt	tggcggcggc	4560
ctgccagtta	tttttaatat	gcaggtaatt	ggcgccgtcg	gcgttagcgg	cggtagcgtc	4620
gagcaggatc	aattattagc	ccagtgcgcc	ctggattgtt	tttccgcatt	ataacctgaa	4680
gcgagaaggt	atattatgag	ctatcgtatg	ttccgccagg	cattctgagt	gttaacgagg	4740
ggaccgtcat	gtcgttttca	ccgccaggcg	tacgcctgtt	ttacgatccg	cgcgggcacc	4800
atgcggcgcg	catcaatgag	ctgtgctggg	ggctggaggga	gcaggggggtc	ccctgccaga	4860
ccataacccta	tgacggaggc	ggtgacggcg	ctgcgctggg	cgccctggcg	gccagaagct	4920
cgccccctgcg	ggtgggtatc	gggctcagcg	cgtccggcga	gatagccctc	actcatgccc	4980
agctgccggc	ggacgcgcgc	ctggctaccg	gacacgtcac	cgatagcgac	gatcaactgc	5040
gtacgctcgg	cgccaacgcc	gggcagctgg	ttaaagtcc	gccgttaagt	gagagaaact	5100
gaatgtatcg	tatctatacc	cgcaccgggg	ataaaggcac	caccgccctg	tacggcggca	5160
gccgcacgca	gaaagaccat	attcgcgtcg	aggcctacgg	caccgtcgat	gaactgatat	5220
cccagctggg	cgtctgtctac	gccacgaccc	gcgacgcggg	gctgcgggaa	agcctgcacc	5280
atattcagca	gacgctgttc	gtgctggggg	ctgaactggc	cagcgatgcg	cggggcctga	5340
cccgcctgag	ccagacgatc	ggcgaagagg	agatcacccg	cctggagcgg	cttatcgacc	5400
gcaatatggc	cgagagcggc	ccgttaaaaac	agttcgtgat	cccggggagg	aatctcgcct	5460
ctgcccagct	gcacgtggcg	cgcacccagt	cccgtcggct	cgaacgcctg	ctgacggcca	5520
tggaccgcgc	gcatccgctg	cgcgacgcgc	tcaaacgcta	cagcaatcgc	ctgtcggatg	5580
ccctgttctc	catggcgcgca	atcgaagaga	ctaggcctga	tgcttgcgct	tgaactggcc	5640
tagcaaacac	agaaaaaagc	ccgcacctga	cagtgcgggc	tttttttttc	ctaggcgatc	5700
tgtgctgttt	gccacgggat	gcagcaccag	cgcgagatta	tgggctcgca	cgctcgactg	5760
tcggacgggg	gcactggaac	gagaagtcag	gcgagccgtc	acgcccttga	caatgccaca	5820
tcctgagcaa	ataattcaac	cactaaacaa	atcaaccgcg	tttcccgagg	gtaaccaagc	5880
ttcacctttt	gagccgatga	acaatgaaaa	gatcaaaacg	atttgcagta	ctggcccagc	5940
gccccgtcaa	tcaggacggg	ctgattggcg	agtggcctga	agaggggctg	atcgccatgg	6000
acagcccctt	tgaccgggtc	tcttcagtaa	aagtggacaa	cggctctgat	gtcgaactgg	6060
acggcaaacg	ccgggaccag	tttgacatga	tcgaccgatt	tatcgccgat	tacgcgatca	6120
acgttgagcg	cacagagcag	gcaatgcgcc	tggaggcggg	ggaaatagcc	cgtatgctgg	6180
tggatattca	cgtcagccgg	gaggagatca	ttgccatcac	taccgccatc	acgccggcca	6240
aagcggtcga	ggtgatggcg	cagatgaacg	tgggtggagat	gatgatggcg	ctgcagaaga	6300
tgcggtcccc	ccggaccccc	tccaaccagt	gccacgtcac	caatctcaaa	gataatccgg	6360
tgacgattgc	cgctgacgcc	gccgaggccg	ggatccgcgg	cttctcagaa	caggagacca	6420
cggtcggtat	cgcgcgctac	gcgccgttta	acgccctggc	gctgttgggtc	ggttcgcagt	6480
gcggccgccc	cggcgtgttg	acgcagtgtc	cgggtggaaga	ggccaccgag	ctggagctgg	6540

gcatgctg	cttaaccagc	tacgccgaga	cggtgtcggt	ctacggcacc	gaagcggat	6600
ttaccgac	cgatgata	ccgtgggtcaa	aggcggtcc	cgctcgcc	tacgcctccc	6660
gcgggttg	aatgcgtac	acctccggca	ccggatccga	agcgctgat	ggctattcgg	6720
agagcaag	gatgctctac	ctcgaatcgc	gctgcatctt	cattactaaa	ggcgccgggg	6780
ttcaggga	gcaaaacggc	gcggtgagct	gtatcggc	gaccggcgct	gtgccgtcgg	6840
gcattcg	gggtgctggc	gaaaacctga	tcgcctctat	gctcgacctc	gaagtggcgt	6900
ccgccaac	ccagactttc	tcccactcgg	atattcgccg	caccgcgcgc	accctgatgc	6960
agatgtgc	gggcaccgac	tttattttct	ccggctacag	cgcggtgccg	aactacgaca	7020
acatgttc	cggctcgaac	ttcgatgcgg	aagattttga	tgattacaac	atcctgcagc	7080
gtgacctg	ggttgacggc	ggcctgcgtc	cggtgaccga	ggcgaaaacc	attgccattc	7140
gccagaaa	ggcgcgggcg	atccaggcgg	ttttccgcga	gctggggctg	ccgccaatcg	7200
ccgacgag	ggtggaggcc	gccacctacg	cgcacggcag	caacgagatg	ccgccgcgta	7260
acgtggtg	ggatctgagt	gcggtggaag	agatgatgaa	gcgcaacatc	accggcctcg	7320
atattgtc	cgcgctgagc	cgcacggcgt	ttgaggatat	cgccagcaat	attctcaata	7380
tgctgcgc	gcgggtcacc	ggcgattacc	tgcgacctc	ggcatttctc	gatcggcagt	7440
tcgaggtg	gagtgcggtc	aacgacatca	atgactatca	ggggccgggc	accggctatc	7500
gcatctct	cgaacgctgg	gcggagatca	aaaatattcc	gggcgtgggt	cagcccgcga	7560
ccattgaat	aggcgggtatt	cctgtgcaac	agacaaccca	aattcagccc	tcttttacc	7620
tgaaaaccc	cgagggcggg	gtagcttctg	ccgatgaacg	cgccgatgaa	gtggtgatcg	7680
gcgtcgccc	tgccttcgat	aaacaccagc	atcacactct	gatcgatatg	ccccatggcg	7740
cgatcctca	agagctgatt	gccggggtgg	aagaagaggg	gcttcacgcc	cgggtggtgc	7800
gcattctgc	cacgtccgac	gtctccttta	tggcctggga	tcgggccaac	ctgagcggct	7860
cggggatcg	catcggtatc	cagtcgaagg	ggaccacgg	catccatcag	cgcgatctgc	7920
tgccgctc	caacctggag	ctgttctccc	aggcgccgct	gctgacgctg	gagacctacc	7980
ggcagattg	caaaaacgct	gcgcgctatg	cgcgcaaaga	gtcaccttcg	cgggtgccgg	8040
tggtgaac	tcagatgggtg	cggccgaaat	ttatggccaa	agccgcgcta	tttcatatca	8100
aagagacca	acatgtgggtg	caggacgcgc	agcccgctac	cctgcacatc	gacttagtaa	8160
gggagtgac	atgagcgaga	aaaccatgcg	cgctgcaggat	tatccggttag	ccaccgcgtg	8220
cccggagcat	atcctgacgc	ctaccggcaa	accattgacc	gatattacc	tcgagaaggt	8280
gctctctgg	gagggtggg	cgcaggatgt	gcggatctcc	cgccagaccc	ttgagtacca	8340
ggcgagatt	gccgagcaga	tgcagcgcca	tgcggtggcg	cgcaatttcc	gccgcgcggc	8400
ggagcttat	gccattcctg	acgagcgc	tctggctatc	tataacgcgc	tgcgcccgtt	8460
ccgctcctc	caggcgaggc	tgctggcgat	cgccgacgag	ctggagcaca	cctggcatgc	8520
gacagtga	gccgcctttg	tccgggagtc	ggcggaagtg	tatcagcagc	ggcataagct	8580
gcgtaaagg	agctaagcgg	aggtcagcat	gccgttaata	gccgggattg	atatcggcaa	8640
cgccaccacc	gaggtggcgc	tggcgctccga	ctaccgcgag	gcgagggcgt	ttgttgccag	8700
cgggatcgt	gcgacgacgg	gcatgaaagg	gacgcgggg	aatatcgccg	ggaccctcgc	8760
cgcgctgg	caggccctgg	cgaaaacacc	gtggtcgatg	agcgatgtct	ctcgcatcta	8820
tcttaacga	gccgcgcgg	tgattggcga	tgtggcgatg	gagaccatca	ccgagaccat	8880
tatcaccg	tcgacctga	tcggtcataa	cccgcagacg	ccgggcgggg	tgggcgttgg	8940
cgtggggac	actatcgccc	tcgggcgggt	ggcgacgctg	ccggcggcgc	agtatgccga	9000
gggggtgat	gtactgattg	acgacgccgt	cgatttctct	gacgccgtgt	ggtggctcaa	9060
tgaggcgct	gaccggggga	tcaacgtgg	ggcgcgatc	ctcaaaaagg	acgacggcgt	9120
gctggtgaa	aaccgcctgc	gtaaaaccct	gccggtgggtg	gatgaagtga	cgctgctgga	9180
gcaggtcccc	gagggggtaa	tggcggcgg	ggaagtggcc	gcgccggggc	aggtgggtgc	9240
gatcctgtc	aatccctacg	ggatcgccac	cttcttcggg	ctaagcccgg	aagagacca	9300
ggccatcgt	cccatcgccc	gcgccctgat	tggcaaccgt	tccgcgggtg	tgctcaagac	9360
cccgagggg	gatgtgcagt	cgcggtgat	cccggcgggc	aacctctaca	ttagcggcga	9420
aaagcgccg	ggagaggccg	atgtcgccga	gggcgcggaa	gccatcatgc	aggcgatgag	9480
cgctcgctc	ccggtacgcg	acatccgcgg	cgaaccgggc	accacgcgcg	gcggcatgct	9540
tgagcgggt	cgcaaggtaa	tggcgctcc	gaccggccat	gagatgagcg	cgatatacat	9600
ccaggatct	ctggcggtgg	atacgtttat	tccgcgcaag	gtgcagggcg	ggatggccgg	9660
cgagtgcgc	atggagaatg	ccgtcgggat	ggcggcgatg	gtgaaagcgg	atcgtctgca	9720
aatgcagg	atcgcccgcg	aactgagcgc	ccgactgcag	accgaggtgg	tgggtggcgg	9780
cgtggagg	aacatggcca	tcgccggggc	gttaaccact	cccggctgtg	cggcgccgct	9840
ggcgatcct	gacctcggcg	ccggctcgac	ggatgcggcg	atcgtcaacg	cggaggggca	9900
gataacgg	gtccatctcg	ccggggcggg	gaatatgg	agcctgttga	ttaaaaccga	9960

gctgggcctc	gaggatcttt	cgctggcgga	agcgataaaa	aaatacccg	tggccaaagt	10020
ggaaagcctg	ttcagtattc	gtcacgagaa	tggcgcggtg	gagttctttc	gggaagccct	10080
cagcccggcg	gtgttcgcca	aagtgggtga	catcaaggag	ggcgaactgg	tgccgatcga	10140
taacgccagc	ccgctggaaa	aaattcgtct	cgtgcgccgg	caggcgaaaag	agaaaagtgtt	10200
tgtcaccaac	tgctgcgcg	cgctgcgcca	ggtctcaccc	ggcggttcca	ttcgcgatat	10260
cgcctttgtg	gtgctggtgg	gcggtcatc	gctggacttt	gagatcccg	agcttatcac	10320
ggaagccttg	tcgcactatg	gcgtggtcgc	cgggcagggc	aatattcggg	gaacagaagg	10380
gccgcgcaat	gcggtcgcca	ccgggctgct	actggccggt	caggcgaatt	aaacggggcg	10440
tcgcgcgagc	ctctaggtac	aaataaaaaa	ggcacgtcag	atgacgtgcc	ttttttcttg	10500
tctagagtag	tggcgaaagg	gggatgtgct	gcaaggcgat	taagttgggt	aacgccaggg	10560
ttttcccagt	cacgacgttg	taaaacgacg	gccagtgaaat	tcgagctcgg	taccgggggc	10620
ggccgcgcta	gcgcccgatc	cagctggagt	ttgtagaaac	gcaaaaaggc	catccgtcag	10680
gatggccttc	tgcttaattt	gatgcctggc	agtttatggc	gggcgtcctg	cccgccaccc	10740
tccggggcgt	tgcttcgcaa	cgttcaaatc	cgctcccggc	ggatttgtcc	tactcaggag	10800
agcgttcacc	gacaaacaac	agataaaaacg	aaaggcccag	tctttcgact	gagcctttcg	10860
ttttatttga	tgcttggcag	ttccctactc	tcgcatgggg	agaccccaca	ctaccatcgg	10920
cgtacggcg	tttcacttct	gagttcggca	tggggtcagg	tgggaccacc	gcgctactgc	10980
cgccaggcaa	attctgtttt	atcagaccgc	ttctgcgttc	tgatttaatc	tgtatcaggc	11040
tgaaaatctt	ctctcatccg	ccaaaacagc	caagcttgca	tgctgcagc	ccgggttacc	11100
atttcaacag	atcgctcctta	gcatataagt	agtcgtcaaa	aatgaattca	acttcgtctg	11160
tttcggcatt	gtagccgcca	actctgatgg	attcgtgggt	tttgacaatg	atgtcacagc	11220
ctttttcctt	taggaagtcc	aagtcgaaaag	tagtggaat	accaatgatc	ttacaaccgg	11280
cggcttttcc	ggcggaata	cctgctggag	cgtcttcaaa	tactactacc	ttagatttgg	11340
aagggtcttg	ctcattgatc	ggatatccta	agccattcct	gcccttcaga	tatggttctg	11400
gatgaggctt	accctgtttg	acatcattag	cgtaaatgaa	gtacttttgt	ctcctgattc	11460
ccagatgttc	gaaccatttt	tgtgccatat	cacgggtacc	ggaagttgcc	acagcccatt	11520
tctcttttgg	tagagcgttc	aaagcgttgc	acagcttaac	tgacactggg	acttcaatgg	11580
atttttcacc	gtacttgacc	ggaatttcag	cttctaattt	gttaacatac	tcttcattgg	11640
caaaagtctg	agcgaactta	gcaatggcat	caaacgttct	ccaaccatgc	gagacttggg	11700
taacgtgttc	agcatcgaaa	taagggttgt	ccttaccgaa	atccctccag	aatgcagcaa	11760
tggctggttg	agagatgata	atggtaccgt	cgacgtcgaa	caaagcgggc	ttaaactttca	11820
aagatagagg	tttagtagtc	aatcccataa	ttctagtctg	tttcctggat	ccaataaatc	11880
taatcttcat	gtagatctaa	ttcttcaatc	atgtccggca	ggttcttcat	tgggtagttg	11940
ttgtaaacga	tttggtatac	ggcttcaaat	aatgggaagt	cttcgacaga	gccacatgtt	12000
tccaaccatt	cgtgaacttc	tttgaggtta	attaaacctt	gagcggattg	gccattcaac	12060
aactcctttt	cacattccca	ggcgtcctta	ccagaagtag	ccattagcct	agcaaccttg	12120
acgtttctac	caccagcgca	ggtggtgatc	aaatcagcaa	caccagcaga	ctcttggtag	12180
tatgtttctt	ctctagattc	tgggaaaaac	atttgaccga	atctgatgat	ctcaccctaa	12240
ccgactcttt	ggatggcagc	agaagcggtt	ttaccccagc	ctagaccttc	gacgaaacca	12300
caacctaagg	caacaacggt	cttcaaagca	ccacagatgg	agataccagc	aacatcttcg	12360
atgacactaa	cgtggaagta	aggtctgtgg	aacaaggcct	ttagaacctt	atggctcgacg	12420
tccttgccct	cgcctctgaa	atccttttga	atgtggtaag	caactgttgt	ttcagaccag	12480
tgttcttgag	cgacttcggt	ggcaatgtta	gcaccagata	gagcaccaca	ttgaatacct	12540
agttcctcag	tgatgtaaga	ggatagcaat	tggacacctt	tagcaccaac	ttcaaaaccc	12600
tttagacagg	agatagctct	gacgtgtgaa	tcaacatgac	ctttcaattg	gctacagata	12660
cggggcaaaa	attgatgtgg	aatgttgaaa	acgatgatgt	cgacatcctt	gactgaatca	12720
atcaagtctg	gattagcaac	caaattgtcg	ggtagagtga	tgccaggcaa	gtatttcacg	12780
ttttgatgtc	tagtatttat	gatttcagtc	aatttttcac	cattgatctc	ttcttcgaac	12840
acccacattt	gtactatttg	agcgaaaact	tctgggtatc	ccttacaatt	ttcggaacc	12900
accttgga	tagtagtacc	ccagttacca	gatccaatca	cagtaacctt	gaaaggcttt	12960
tcggcagcct	tcaagaaaac	agaagaggaa	cttctctttc	taccagcatt	caagtggccg	13020
gaagttaagt	ttaatctatc	agcagcagca	gccatggaat	tgtcctcctt	actagtcatg	13080
gtctgtttcc	tgtgtgaaat	tgttatccgc	tcacaattcc	acacattata	cgagccggat	13140
gattaattgt	caacagctca	tttcagaata	tttgccagaa	ccgttatgat	gtcggcgcaa	13200
aaaacattat	ccagaacggg	agtgcgcctt	gagcgacacg	aattatgcag	tgatttacga	13260
cctgcacagc	cataccacag	cttccgatgg	ctgcctgacg	ccagaagcat	tggtgcacgc	13320
tagccagtag	atttaaatgg	taccctctag	tcaaggcctt	aagtgagtcg	tattacggac	13380

tgccgctcgt	tttacaacgt	cgtgactggg	aaaaccctgg	cgttacccaa	cttaatcgcc	13440
ttgcagcaca	tccccctttc	gccagctggc	gtaatagcga	agaggcccgc	accgatcgcc	13500
cttccaaca	gttgcgcagc	ctgaatggcg	aatggcgct	gatgcggtat	tttctcctta	13560
cgcatctgtg	cggtatttca	caccgcatat	ggtgcactct	cagtacaatc	tgctctgatg	13620
ccgcatagtt	aagccagccc	cgacacccgc	caacacccgc	tgacgagct		13669

<210> 5
 <211> 44
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> promoter

<400> 5	
cgagccgtca	cgcccttgac aatgccacat cctgagcaaa taat
	44

<210> 6
 <211> 61
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 6	
tcggttttca	cagttgttac atttcttttc agtaaagtct ggatgcatat ggcggccgca
t	60
	61

<210> 7
 <211> 65
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 7	
catgatgccc	tccaatatgg ttatttttta ttgtgaatta gtctgtttcc tgtgtgaaat
tgta	60
	65

<210> 8
 <211> 60
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> primer

<400> 8	
acttagtttg	cccagcttgc aaaaggcatc gctgcaattg gatgcatatg gcggccgcat
	60

<210> 9
 <211> 67
 <212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 9

cattcttcaa ctgctccgct aaagtcaaaa taattctttc tcgtctgttt cctgtgtgaa 60
attgtta 67

<210> 10

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 10

actttggtcg tgaacatttc ccgtgggaaa 30

<210> 11

<211> 28

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 11

agaaagataa gcaccgagga tcccgata 28

<210> 12

<211> 26

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 12

aacaggagtg ccaaacagtg cgccga 26

<210> 13

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> primer

<400> 13

ctattcggcg caaatcaac gtgaccgcct 30

<210> 14

<211> 30

<212> DNA

<213> Artificial Sequence

<220>
 <223> primer

 <400> 14
 gctgtgcagg tcgtaaatca ctgcataatt 30

 <210> 15
 <211> 24
 <212> DNA
 <213> Unknown

 <220>
 <223> wild type lac operator

 <400> 15
 tggaattgtg agcggataac aatt 24

 <210> 16
 <211> 24
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> mutated lac operator

 <400> 16
 tggaattgtg aacggataac aatt 24

 <210> 17
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 17
 gtgtcttctt cctgccagac 20

 <210> 18
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 18
 cctgcaacag tacgccaag 19

 <210> 19
 <211> 22
 <212> DNA
 <213> Artificial Sequence

 <220>

<223> primer

 <400> 19
 catctggtcc atgtcgataa gc 22

 <210> 20
 <211> 20
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 20
 gcggttggtca gctttcacaa 20

 <210> 21
 <211> 18
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 21
 agctggtctg agaggatg 18

 <210> 22
 <211> 19
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 22
 aattccgatt aacgcttg 19

 <210> 23
 <211> 39
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

 <400> 23
 agaattgcaa cagtaatgcc agcttggttaa aaatgcgta 39

 <210> 24
 <211> 36
 <212> DNA
 <213> Artificial Sequence

 <220>
 <223> primer

<400> 24

cctgttttgt gctcagctca tcagtggctt gctgaa

36